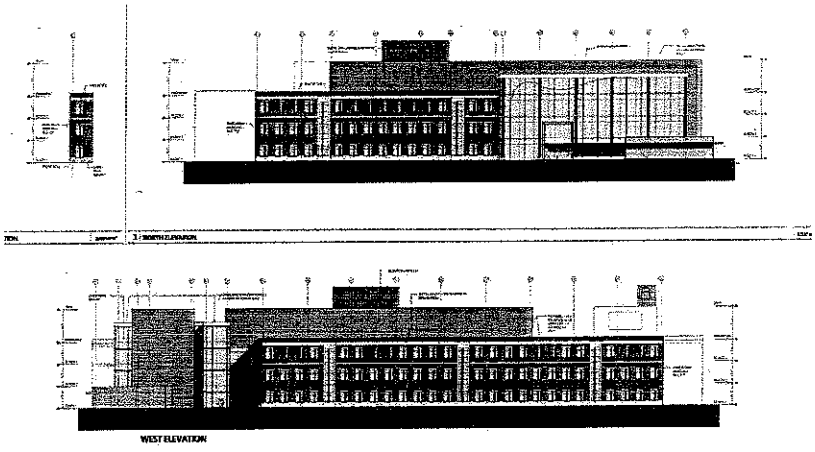
MIDDLE TENNESSEE STATE UNIVERSITY

Tennessee's Best

Middle Tennessee State University
Science Facility



Over the last 40 years, the United States has allowed domestic science and technology programs to slip far behind educational efforts in the rest of the industrialized world. American college graduates often lag far behind their European and Asian counterparts in math, science and technology. As a result many science and technology based efforts, including highly paid jobs and research, have been moving offshore; negatively impacting the American economy. Locally, as evidenced by Rutherford County's efforts to attract a major corporate research and development center, the lack of graduates with degrees in the biological and physical sciences can serve as a major limitation in the region's ability to attract quality jobs that require training in the sciences.

As was noted in the report *Rising Above the Gathering Storm*, commissioned by the National Academies, "Because other nations have, and probably will continue to have, the competitive advantage of low-wage structure, the United States must compete by optimizing its knowledge-based resources, particularly in science and technology…" If we are going to be successful in reversing this trend that has allowed us to fall behind the rest of the world, we must have better trained and better equipped students for our workforce. Critical to that effort is the completion of the new Science Building on the MTSU campus.

Middle Tennessee State University is committed to providing our students with the highest quality education and to developing programs that meet the needs of a 21st Century workforce. As the State of Tennessee has charged the University with securing support funding for this critically needed facility, we request your support through a grant of $1 million to help construct and equip our new science facility.

The Middle Tennessee State University Science Building

Once complete, the Middle Tennessee State University Science Building will provide over 250,000 gross square feet of teaching, faculty and student research laboratories and collaborative learning spaces. Building on MTSU's rich historical tradition in teacher training, the facility makes full use of technology and contemporary research in teaching cognitive science.

The new science facility demonstrates MTSU and TBR commitment to serving students and providing a scientifically literate citizenry for the next generation. Students at all levels will receive a state of the art science experience and many will undoubtedly go on to become leading professionals in a variety of science and health based fields. In addition, the next generation of science teachers will be produced in this facility and will take their experiences to our children and grandchildren.

Nearly all of the 26,000+ students at MTSU will benefit from the improved science facilities, and it is anticipated that more than 80% of all undergraduate students will attend class in the new building during their time on campus. Once completed, this new facility will become the academic hub of campus and will attract students, alumni and visitors to its state of the art facilities.

The centerpiece of this new facility will be the approximately 6500 square foot, three-story atrium, designed to be the central gathering and circulation space for the entire building. Functionally, the atrium provides a waiting area for and direct access to adjacent classrooms, conference rooms and labs. With a total building capacity of over 3,000 students and faculty when classes are in session, thousands of users would be expected to utilize this main building entrance on any given day.

The 2nd floor "Commons" space is located above the Lecture Hall and, is effectively a 2,500 square foot classroom without walls. In various configurations it can serve as a flexible learning space for students and teachers, for lecture series, as setup space for traveling exhibitions and at all times as a central informal meeting area for students and faculty. The Commons is the only gathering place in the building that can effectively support another key program feature – serving to showcase our diverse biology and chemistry programs, science education, and provide other opportunities for a variety of exhibits.

The space is core to the nationally recognized "Project Kaleidoscope" recommendations to create spaces for undergraduate students in an environment where they can become "engaged learners". The most effective learning environments are not just the formal lab

areas, but also include areas for informal collaborate learning. The features of the space include state of the art Audio-Visual presentation technology. The materials in the atrium are designed to control the sound acoustics and thus support effective presentations in the space.

To meet the academic and pre-professional needs of our students, the facility will house a number of classrooms, auditoriums and laboratories to serve the diverse needs of our students. Science courses offered in the new building serve academic programs beyond general education, biology, and chemistry. With more than 20 non-science majors requiring a biology, chemistry, or physical science course as a core requirement in their curriculum, this facility is the academic core for many of our students.

The building design includes the following classrooms, labs and research areas:

- 36 teaching laboratories, serving General Education and Major requirements in Biology and Chemistry

- 13 research suites, including collaborative research areas for Biology and Chemistry faculty and students, a state-of-the-art Electron Microscopy suite, a Nuclear Magnetic Resonance suite, a Vivarium and a Greenhouse

- 6 lecture classrooms designed to support and encourage group activities

- 3 interdisciplinary suites that include faculty from biology, chemistry, computer science, mathematics, and physics. These scholarly spaces are dedicated to preparation of Ph.D. students seeking advanced degrees in:
    - Math Science Education
    - Computational Science
    - Molecular Biosciences

- 2 classroom/laboratories are dedicated to teaching future K-12 teachers. These rooms are planned to support small group collaboration and experimentation in addition to enhanced media presentation and lecture.

Impact on Economic Development

As part of its Jobs4TN initiative, the Department of Economic and Community Development has identified six industry clusters where Tennessee has the opportunity to attract and develop new high paying jobs for our state. Three of these, **chemicals and plastics; health care; and advanced manufacturing and energy technologies,** will depend on the ability of our state's institutions of higher education to produce graduates with the advanced skills required of these dynamic industries.

In like manner, the Rutherford County Chamber of Commerce has initiated its own *Destination Rutherford* effort, which targets improved corporate recruitment and job creation in a number of strategic areas, including **Research and Development; Food Technology; and Green Technology/Renewable Energy**, that will require a significant increase in the number of college graduates with backgrounds in the natural and physical sciences.

Through the success of these related efforts, there will be a significant increase in both the disposal income and the corporate and personal tax revenues generated to benefit our community. With Middle Tennessee State University currently serving as the largest producer of college graduates for Rutherford County and the mid-state workforce, is readily apparent that this facility is critical in providing the human capital needs of these rapidly emerging business sectors.

Additionally, as we look at the long term needs of our community (and as expressed in the America Competes legislation), there is also a need to enhance the training of K-12 educators in the STEM (Science, Technology, Engineering and Math) disciplines, which this facility will help address. Significant space has been allocated for demonstration labs and classroom facilities specifically targeting those current and future K-12 teachers who will be working in the sciences. These teachers will help ensure that students leave the K-12 system with the basic science skills to compete in the global work force, further assuring that Tennessee and Rutherford County are prepared to meet the needs of our nation's changing economy.

Funding

Historically the State of Tennessee has provided 100% of the funding associated with capital projects on our college and university campuses. However, with the continued escalation in construction costs and the residual effects of our nation's economy, this past year the Tennessee General Assembly adopted a new funding formula for capital projects that requires institutions to share in the actual costs of construction. This new funding

model calls for the campuses to provide 25% of the first $75 million in construction costs, with the State providing funds for any amounts above $75 million.

With a total project cost of more than $140 million and anticipated construction costs expected to be $120-123 million, the MTSU Science Building is the largest construction project ever undertaken by the State. As part of the funding, MTSU is required to provide $18.75 million toward the total construction. Our funding plan will include contributions from individuals, corporations and local government; a reallocation of institutional funds; and a dedicated student fee. Our intent is to utilize external contributions as much as possible to reduce the impact on our students, and as such we will be aggressively exploring all available options for support.

Accordingly, we are asking the Rutherford County Commission to consider a grant of $1 million toward the construction costs of the building. This grant will not only provide the University much needed funding for this critical project, but will serve to demonstrate the importance this community places on education and the synergetic partnership that exists between Middle Tennessee State University and our local community.